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COMPANY: Hydrocatalysis Power
ATTENTION: Stev Bollinger
DESTINATION
FAX NO: (610) 651-4940
FROM: Dr. A.Y. Craig
SUBJECT: XPS/ESCA Results (CEA #44545)

REFNO: 69942

DATE: November 3, 1994

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CE&A REPLY FAX
NO: (415) 369-7921

Please find attached typical results for your samples. A 2 mm x 0.8 mm analysis area was selected for this work.

Elements C, O, N, Si, Cl, S, Ni, Zn, Sn, K, Ca, Mg and Cr are detected at the surface for the Nickel Cathode Sample #A. The concentration for C is approximately 52 at%, while that for Ni is approximately 9 at%. The concentrations for Ca (approximately 0.1 at%) and Mg (approximately 0.2 at%) are considered maximum values due to the noisy spectra.

Elements C, O, N, Si, S, Ni, Zn, Sn, Mg and Cr are detected at the surface for the Nickel Cathode Sample #B. The concentration for C is approximately 41 at%, while that for Ni is approximately 13 at%.

This analysis involved approximately 8 hours of instrument time. You will be invoiced for 6 hours (\$1800.00), as quoted. If you have any questions regarding this work, please call me.

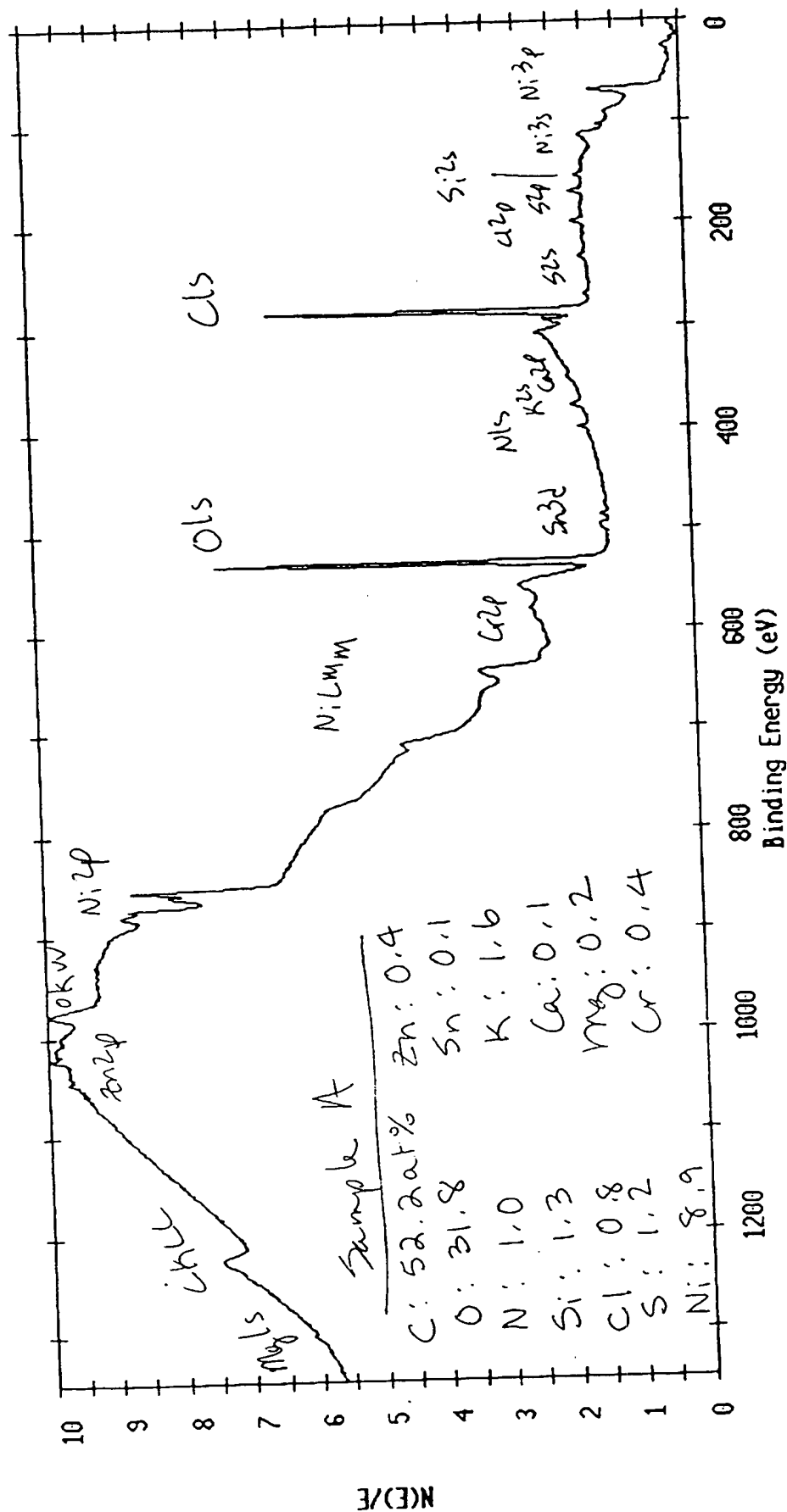
Sincerely,

Angela Y. Craig

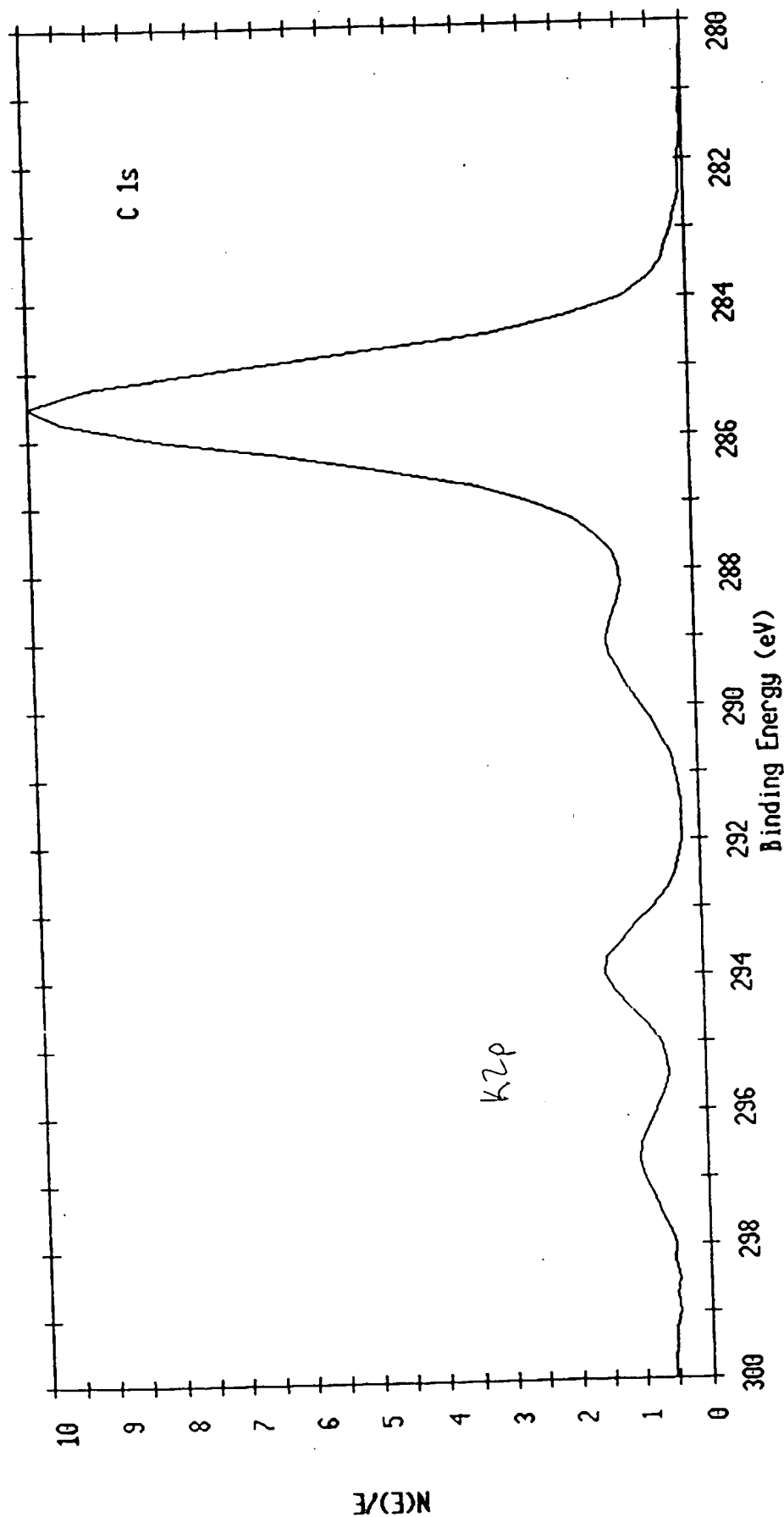
ESCA Survey 1 Nov 94 Angle: 45 degrees Acquisition Time: 29.82 min

File: HYDROCAT10 SAMPLE A

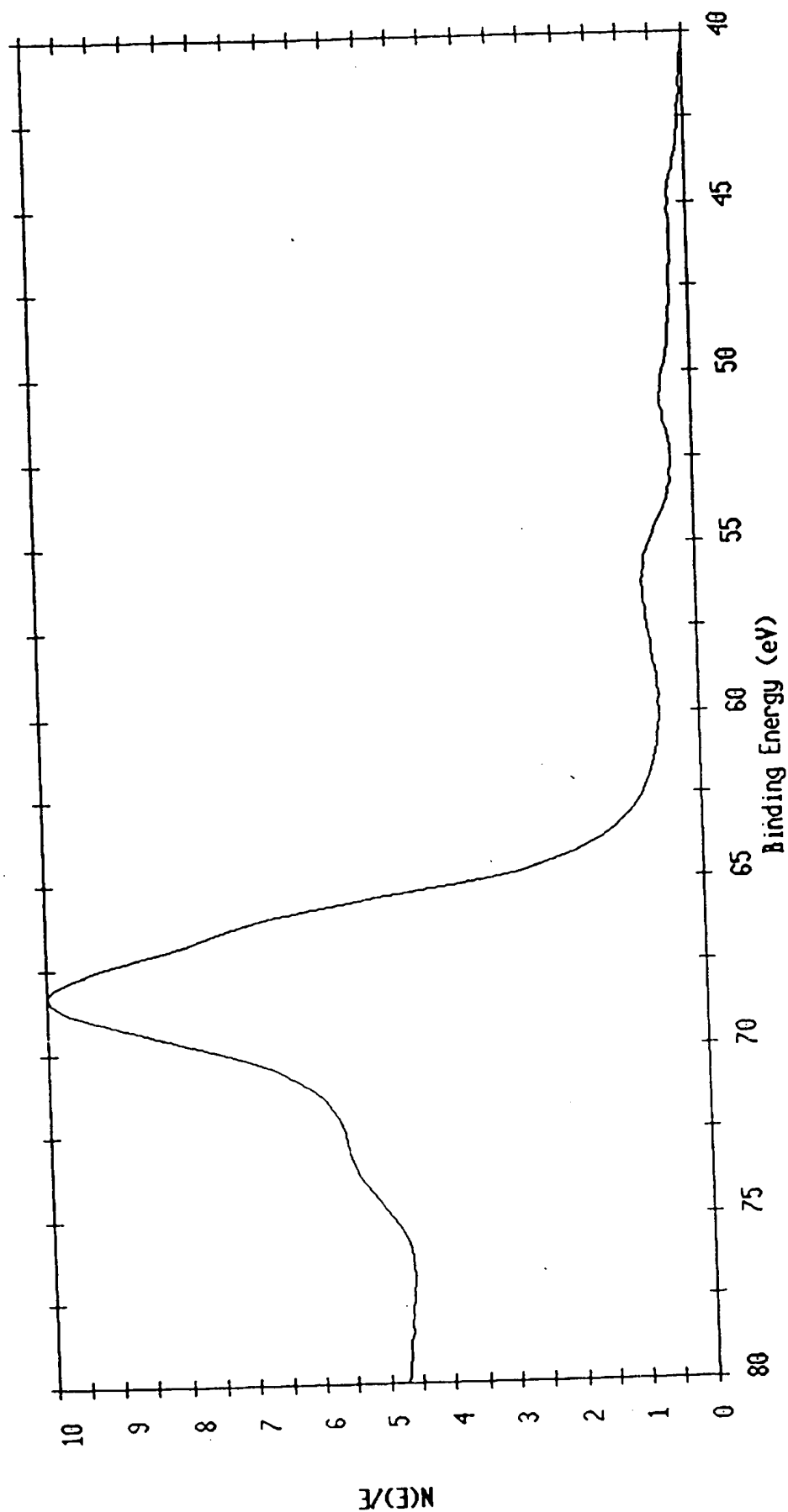
Scale Factor: 29.950 kc/s Offset: 7.175 kc/s Pass Energy: 187.850 eV Aperture: 5 Al 450 W



ESCA Multiplex 1 Nov 94 Species: C1 Region: 1 Angle: 45 degrees Acquisition Time: 2.09 min
File: HYDROCAT11 SAMPLE A
Scale Factor: 6.336 kc/s Offset: 13.449 kc/s Pass Energy: 58.700 eV Aperture: 5 Al 450 M



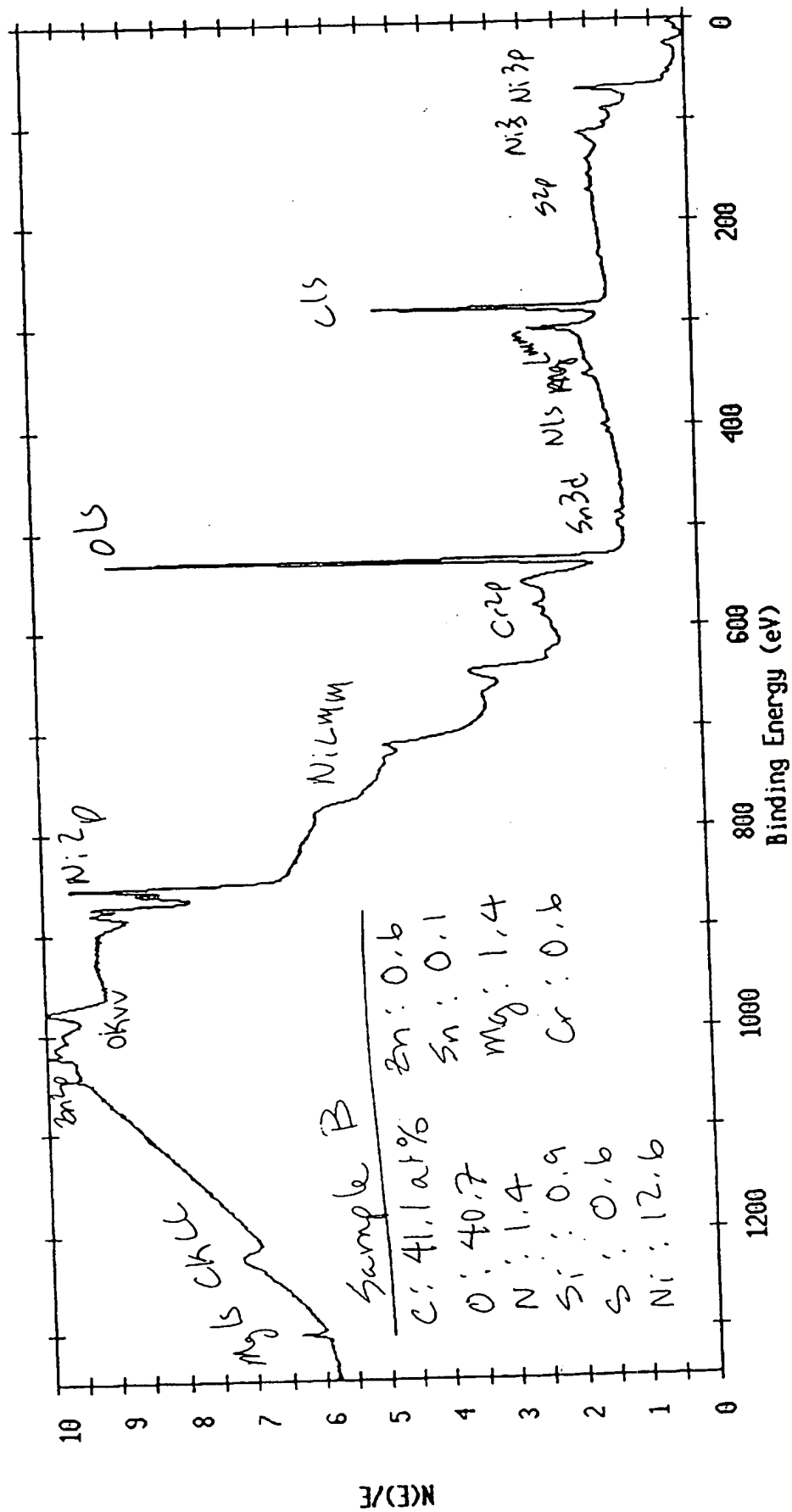
ESCA Multiplex 1 Nov 94 Species: Fe3 Region: 2 Angle: 45 degrees Acquisition Time: 116.46 min
File: HYDROCAT11 SAMPLE A
Scale Factor: 1.290 kc/s Offset: 3.150 kc/s Pass Energy: 58.700 eV Aperture: 5 Al 450 W



ESCA Survey 1 Nov 94 Angle: 45 degrees Acquisition Time: 29.82 min

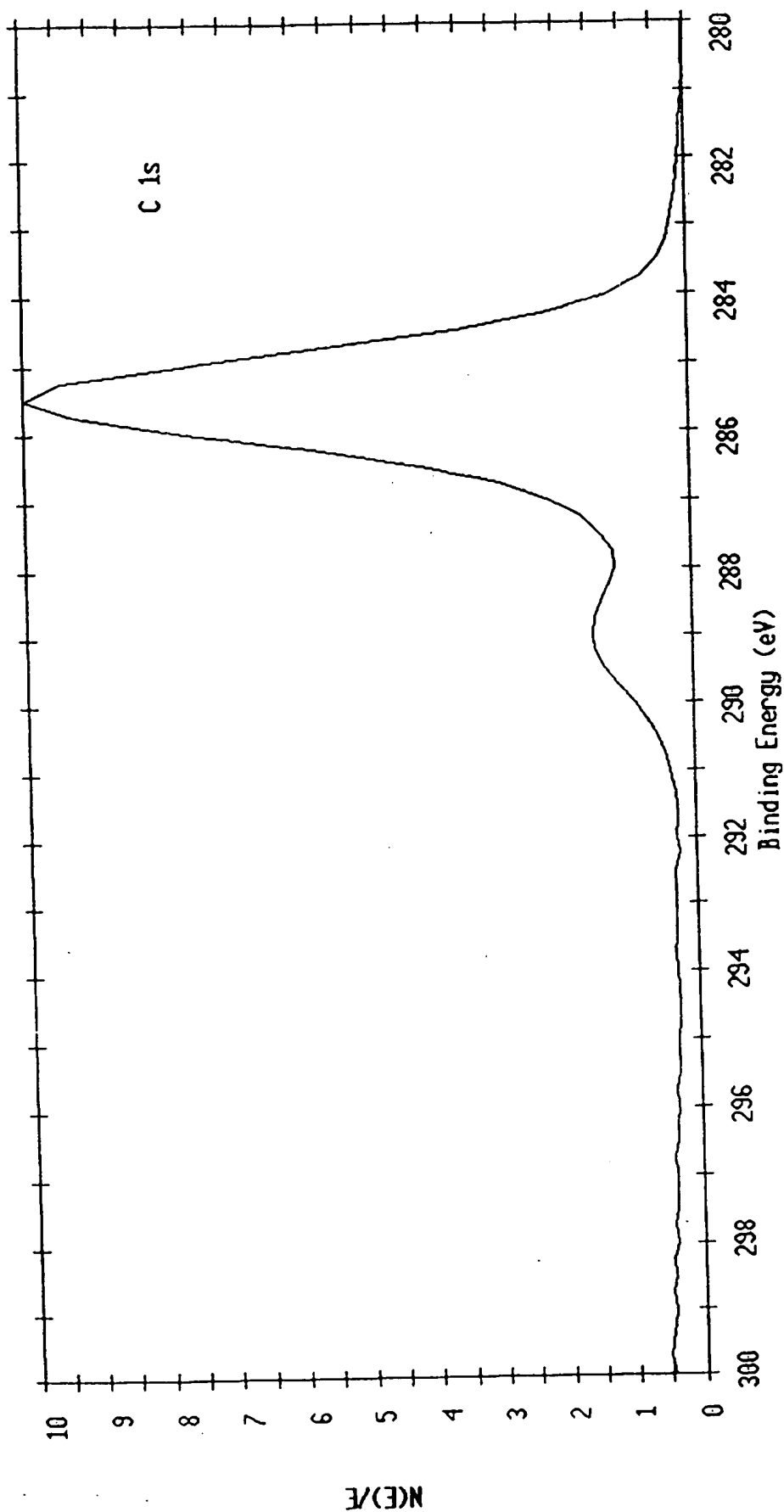
File: HYDROCAT20 SAMPLE B

Scale Factor: 30.190 kc/s Offset: 6.971 kc/s Pass Energy: 187.850 eV Aperture: 5 Al 450 W



(6)

ESCA Multiplex 1 Nov 94 Species: C1 Region: 1 Angle: 45 degrees Acquisition Time: 2.09 min
File: HYDROCAT21 SAMPLE B
Scale Factor: 4.695 kc/s Offset: 12.191 kc/s Pass Energy: 58.700 eV Aperture: 5 Al 450 W



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ESCA Multiplex 1 Nov 94 Species: Fe3 Region: 2 Angle: 45 degrees Acquisition Time: 116.46 min
File: HYDROCAT21 SAMPLE B
Scale Factor: 1.536 kc/s Offset: 2.987 kc/s Pass Energy: 58.700 eV Aperture: 5 Al 450 M

